IN THE

Supreme Court of the United States

October Term, 1941

No. 680

U. S. INDUSTRIAL CHEMICALS, INC.,
Petitioner,

vs.

CARBIDE AND CARBON CHEMICALS CORPORATION,
Respondent.

BRIEF FOR RESPONDENT.

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INDEX

	PAGE
Opinions below	1
The questions presented	1
Statement of the case	2
Ethylene oxide	2
The acquisition of the patent by respondent	4
Subject matter of the patent	4
Original Lefort patent	6
The reason for the reissue	9
The reissue patent	10
Summary of argument	13
Argument	14
POINT I—Claims 8 and 9 of the reissue patent are for the same invention as that of the original patent	14
Petitioner's argument before this Court is based on a fundamental error of fact	17
POINT II—Petitioner has acquired no "intervening rights"	21
Conclusion	27

List of Cases.

	PAGE
Adamson v. Gilliland, 242 U. S. 350	15
Abercrombie & Fitch Co. v. Baldwin et al., 245 U. S. 198	21
Bates v. Coe, 98 U. S. 31	21
Frearson v. Loe, L. R. 9; Ch. D. 48	26
Oppoenhusen v. Falke, 2 Fisher 181	26
Otis Elevator Co. v. Atlantic Elevator Co., 47 F. (2d) 545	26
Poppenhusen v. New York Gutta Percha Comb Co., 2 Fisher 62	26
Seymour v. Osborne, 11 Wall 516	16
Sontag Chain Stores Co. v. National Nut Co., 310 U. S. 281	25
Topliff v. Topliff, 145 U. S. 156	9
Walker on Patents, Deller's Edition, Vol. II, p. 1384	25

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Opinions Below.

The opinion of the Circuit Court of Appeals (R. II, pp. 173-187) is reported in 121 F. (2d) 665. The opinion of the District Court (R. I, pp. 3-22) is reported in 34 F. Supp. 813.

The Questions Presented.

For reasons which later will be made clear, respondent does not agree that either of the two alleged "questions presented" appearing on page 2 of Petitioner's Brief is framed by the facts of this case. Because of this disagreement it is necessary for respondent to add so materially to petitioner's statement of the case as to warrant a complete restatement thereof.

Statement of the Case.

Ethylene Oxide.

Ethylene is a hydrocarbon gas, the existence of which has been known for more than a century. It has the chemical formula C_2H_4, from which it will be seen that it is composed of two atoms of carbon and four atoms of hydrogen.

Beginning as early as 1862, and extending throughout the years continuously until the invention of the patent in suit, the scientists and chemists throughout the world believed, and publicly asserted, that it was impossible to form ethylene oxide (having the formula C_2H_4O) by the *direct* oxidation of ethylene with oxygen—*it was regarded as a chemical impossibility.* One reason for this was because whenever ethylene was *directly* reacted with oxygen, other and less desirable oxygenated compounds (notably aldehydes) were immediately formed, to the exclusion of ethylene oxide. In consequence, in the past, whenever ethylene oxide *was* produced, it was produced *indirectly, i. e.* solely and exclusively by a series of chemical processes and reactions, all of which were signally characterized by the *absence* of direct oxidation of ethylene with oxygen.

Thus, as early as 1862, it was asserted by M. Ad. Wurtz, in his published work "Wurtz on Oxide of Ethylene, etc." (R. I, p. 454):

> "This oxide [oxide of ethylene] cannot be formed directly by the action of oxygen on ethylene, but it is obtained as a derivative of glycol, of which it is the anhydride or ether."

This continued to be the belief of the scientists and chemists until the Lefort invention here involved. Dr.

Arthur B. Lamb of Harvard University,[1] perhaps the leading chemist in the world today, testified in this case, in response to a question by the Court (R. I, p. 256):

> "* * * when I first saw this patent [the original Lefort patent] I was more or less dumbfounded, to tell you the truth, to think that you could realize this reaction, which, to a chemist, is quite a surprising reaction, and I did not know that it had been achieved."[2]

Throughout the years, however, the desirability—indeed, the great economic and industrial value—of direct oxidation of ethylene to produce ethylene oxide had been recognized; and countless efforts had been made to accomplish it. Even petitioner's Chairman, Mr. Adams, testified that "toward the end of 1933" he was advised by his own Research Department "that for 12 or 15 years people had been working toward the direct oxidation of ethylene" (R. I, pp. 221-222), without success. Thus, up to the time of the Lefort invention, the total of experience and scientific and chemical knowledge was summed up in the simple statement that the *direct* oxidation of ethylene to ethylene oxide was impossible of accomplishment.

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[1] Dr. Lamb is Professor of Chemistry at Harvard University. He had charge of Chemical Research for the Government during the first World War; he organized and directed the Fixed Nitrogen Research Laboratory in Washington, established by President Wilson for the purpose of converting the Government plant at Muscle Shoals into effective plants for the manufacture of fixed nitrogen from the air (R. I, p. 238).

[2] To the same effect is the testimony of Dr. Reston Stevenson, Professor of Chemistry of the College of the City of New York (R. II, pp. 8-9); Dr. J. C. W. Frazer, the noted chemical authority of Johns Hopkins University, appointed by the District Court as an impartial expert in the case (R. II, p. 84); and Dr. Hugh S. Taylor, Professor of Chemistry of Princeton University (R. II, p. 6). Additionally, Dr. Lloyd H. Reyerson, Professor of Chemistry at the University of Minnesota, in 1928 published an article to the same effect (R. I, p. 447).

The patent in suit is for the invention which made this "impossible" thing a *fait accompli*.

The acquisition of the patent by respondent.

Realizing the great utility of this invention, respondent purchased the United States patent in April, 1936, and proceeded immediately to prepare for commercial operations thereunder, with the result that by June 6, 1940, when the trial of this case was started, respondent was operating the process in its plant at South Charleston, West Virginia, to produce more than ten million pounds of ethylene oxide a year, and had already once doubled its facilities (R. II, p. 61; I, p. 20).

Indeed, the invention was of such great economic and industrial utility and value that petitioner, *more than a year after the grant of the reissue patent on May 18, 1937*, and with full knowledge and in conceded deliberate infringement thereof, invested more than a million dollars in the construction of its plant in Maryland to practice the invention of the patent in a defiant appropriation which it here seeks to justify (Petitioner's Brief, footnote p. 52). Moreover, petitioner launched upon its deliberate infringement despite the fact that the non-infringing and patent-free process of *indirectly* producing ethylene oxide was in commercial use and available to it (R. I, p. 229). Indeed, the unpatented *indirect* process is still being used by others.

Subject matter of the patent.

Lefort discovered that *if ethylene gas is exposed to molecular oxygen in the presence of water and a catalyzer, in a reaction chamber maintained within a specific range of temperature, ethylene oxide is produced.*[3] Moreover, by

[3] Molecular oxygen, represented by the chemical symbol O_2, is the form in which oxygen occurs in air.

this method ethylene oxide can be produced in commercial quantities and at sufficiently low cost to make its production in this manner an attractive commercial enterprise. This discovery also made available the ethylene oxide thus produced at low cost, for all of the many uses to which it theretofore had been put and to which it may be put in the future. Truly, therefore, this was undeniably and undeniedly a substantial contribution to the benefit of mankind.

As a matter of undisputed fact, the direct oxidation of ethylene to form ethylene oxide in accordance with the patented invention here involved, and as practiced by both petitioner and respondent, essentially requires a reaction zone or chamber maintained within specified temperature limits and in which are simultaneously present

(1) ethylene

(2) oxygen

(3) water

(4) a silver catalyst.[4]

With an understanding of what the invention is, we now turn to the original patent to see how it was therein described and claimed.

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[4] As a matter of scientific fact, of these four materials only the ethylene and oxygen are *reactants*, and all of the ethylene oxide product is produced therefrom. The factors of water, catalyst and specified temperature are *causing influences* only. Petitioner in its Brief (for example, pp. 6, 17, 25), has elected to adopt a course of argument which rests on the assertion that water is also "one of the *reacting* ingredients" (p. 17), but the witnesses (including petitioner's own expert, Dr. Reyerson) agreed that water is *not* a reacting ingredient in the process (R. II, pp. 102-103, Id. p. 3). We here point out that this error of scientific fact, which forms petitioner's premise, is *essential* to the argument petitioner advances. However, we will not refer to it again because we propose to show the fallacies and utter want of merit in petitioner's argument regardless of this error. (Italics here and throughout this brief ours.)

The Original Lefort Patent (R. I, p. 283).

The specification of the original patent starts with the statement:

> "This invention has for object a process for the production of ethylene oxide which mainly consists in *subjecting ethylene to the simultaneous action of the oxygen of air and of water, in the presence of a catalyzer*, and, if need be, of hydrogen."

Note that it is the action of "oxygen *of* air and of water" that is required, not of oxygen *or* air *and* water.

It is a matter of common knowledge, and a fact conceded in this case (R. II, p. 122), that ordinary air includes both oxygen and water in its make-up. It is also a fact, conceded in this case (Petitioner's Brief, p. 18; see also R. II, p. 81), that the water in air is sufficient to cause the reaction to occur, under the stated conditions, which reaction will continue and produce the desired ethylene oxide product as long as the air and the ethylene are fed into the reaction chamber (R. II, p. 83).

Therefore, the opening statement of the original patent specification is significant in that with great particularity it points out, in complete harmony with the recited necessities for the direct oxidation of ethylene (*ante*, p. 5), that the ultimate product (ethylene oxide) is obtained by the simultaneous action on ethylene of the "oxygen *of* air *and* of water" in the presence of a catalyzer. Another way of saying the same thing would be that the product is obtained by the action of *air* on ethylene in the presence of a catalyzer, in view of the fact that *air* contains the necessary oxygen *and* water.

This is further emphasized by the statement of the patent (column 2, line 12):

> "The oxygen can be *the oxygen of the air, this latter gas being introduced in the reaction.*"

The specification then continues (column 2, line 14):

> "The *efficiency* of the reaction is *increased* by diminishing the CO_2 which is formed, *by introduction*, in this reaction, *of a suitable quantity of water.*"

From this language it will be noted that the introduction of air (with its water content) and ethylene into the reaction chamber, under the conditions specified, *causes* the desired reaction, and that it is merely its *efficiency* that is *increased* by the

> "introduction, in this reaction, of a suitable quantity of water".

In other words, it is not the *reaction* (the oxidation of ethylene) which is *effected* by the introduction of *this* particular water. To the contrary, it is merely the "*efficiency* of the reaction"—*already occurring*—that is *increased* by the introduction of *this* particular water.

The specification again states with respect to *this* particular, or *additional* water (column 2, line 35):

> "From experiments effected by the applicant, it results that, *if* water is introduced in suitable quantity, the reaction is not only *facilitated*, as above stated, but, in addition, the reaction giving CO_2 [an undesirable by-product] probably by direct oxidation of ethylene according to the equation:
>
> $$C_2H_4 + 3O_2 = 2H_2O + 2CO_2$$
>
> is checked, owing, as is probable, to the partial pressure of water."

From this again it will be seen that the statement is that "*if* water is introduced"—obviously meaning, as above shown, water *in addition* to the water (and oxygen) in *air*

necessary to *cause* the reaction—the reaction is "facilitated" and the formation of undesirable by-products is checked. Again it should be noted that this *additional* water, *if* introduced, is not recited as *causing* the reaction, but merely as *facilitating* it.

Three *modi operandi* are set forth in the specification (p. 2, column 1, lines 5-57), in *each* of which the common factor exists that ethylene and *air* are brought into contact in the reaction chamber in the presence of the specified catalyst, and at the specified temperature. This, alone, insures the production of ethylene oxide. In addition, *each* instance recites the presence of *additional* water, which, as has been shown, *may* be used to increase the "efficiency" of the reaction, or so that the reaction may be "facilitated" and the formation of undesirable by-products be checked.

The original specification likewise enumerates a large number of catalysts that might be used (p. 1, line 26). We are here concerned with but one of them, namely, silver alone, specified as number "(2)". No issue is raised in this Court as to the catalyst (Petitioner's Brief, p. 6).

Finally, the seven claims of the original patent warrant consideration. Claims 1, 2, 3, 6, and 7 are expressly limited to catalyzers composed of something *other* than silver alone, notwithstanding the fact that silver alone was specifically named as a catalyst in the specification. The remaining claims (4 and 5), though specifying silver alone as a usable catalyst, are expressly limited to the introduction of hydrogen into the reaction chamber, notwithstanding the fact that the specification specifically recites that the use of hydrogen is entirely optional.[5]

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[5] Additionally, various of the claims contain other wholly unnecessary limitations, such as the pressure at which the reaction is carried on and the use of carbon dioxide, both of which, likewise, are specifically recited by the specification as being entirely optional. This is admitted by Petitioner's Brief, top of p. 6, and second full paragraph on p. 9.

From the foregoing it will be seen that although the original patent disclosed *everything* that was necessary to produce ethylene oxide by direct oxidation, *and specifically recited every essential factor of the process, and the conditions under which it should be carried out*, the *claims* of the patent that were procured for this remarkable invention were mistakenly limited as to the *catalyst* or as to other *optional* details, which the patent on its face made evident, were wholly unnecessary and unintended limitations.

The reason for the reissue.

Factually, the original patent was prepared by a French attorney who "had no special academic or practical training in chemistry" (R. I, p. 358); and, quite obviously, he was unfamiliar with American patent practice. After respondent satisfied itself as to the feasibility of operating under the patent, and had purchased it from the French owner, steps immediately were taken in strict accordance with the Reissue Statute to remedy the "inadvertence, accident or mistake" by which this great invention had been inappropriately or inadequately claimed.[6] The propriety of such action, under such circumstances, has been expressly recognized by this Court in a great many cases, of which but one need be cited (*Topliff* v. *Topliff*, 145 U. S. 156); and is expressly conceded by petitioner (Petitioner's Brief, p. 26). Consequently, an application for reissue was filed on September 25, 1936—less than two years after the issuance of the original patent—and the reissue application was promptly prosecuted so that the reissue patent was granted a few months thereafter, on May 18, 1937.[7]

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[6] Section 4916 R. S., reproduced at the end of Petitioner's Brief.

[7] The testimony explaining how and why the reissue was applied for will be found at R. I, pp. 267-268, 275-276.

The reissue patent (R. I, p. 277).

Though the reissue specification was shortened and simplified, everything appears therein that it is agreed is essential to the direct oxidation of ethylene (see, *ante*, p. 5). The opening statement of the specification is:

> "This invention provides a specific and novel process for making ethylene oxide. It essentially consists in *causing* ethylene to combine directly with molecular oxygen at temperatures of about 150° to about 400° C. in the presence of a surface catalyst which favors the oxidation of ethylene to ethylene oxide under these conditions."

It should be noted that the foregoing statement defines the invention as "causing" the direct combination of oxygen and ethylene under the temperature and catalytic conditions specified.[8] This is precisely what the original patent stated in different words. Concededly (see *ante*, p. 5), a factor *essential* to *cause* oxygen and ethylene to combine, is *the presence of water*. This fact is specifically brought out later in the specification, and is expressly included in the claims, as we shall later show.

The specification continues (p. 1, column 1):

> "This process is characterized by an entirely unique reaction in which the direct addition of a single oxygen atom to the ethylene molecule occurs without the formation of significant amounts of other oxygenated compounds such as aldehydes."

Here, again, is a restatement of precisely what was disclosed in the original patent, referring to the theretofore

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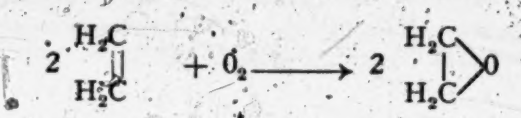
[8] The patentee stated this in identical *chemical* language in both his original and reissue patents (R. I. p. 283, column 1, lines 10 *et seq.*; p. 277, column 1, lines 17 *et seq.*) by means of the chemist's equation—



acknowledged impossibility of "direct" combination of oxygen and ethylene, and contracting, into the single assertion, the statement of the original patent concerning the avoidance of undesirable oxygenation by-products in the process.

Again, like the original patent, the reissue states (column 1, line 30):

> "*The oxygen can be the oxygen of the air,* and can conveniently be mixed with the ethylene prior to the reaction."

With the utilization of *air* as the source of oxygen for the reaction, there automatically is provided water, constituting moisture of the air, so that here again, as in the original patent, are present the gases necessary for the direct oxidation of ethylene—*viz.* ethylene, oxygen and water.[9]

The specification continues (column 1, line 33):

> "The oxidation of ethylene takes place with a giving off of heat, and it is, of course, desirable to maintain the temperature of the zone of reaction within the range specified. This can be *facilitated* by suitable dilution of the reaction gases, such as that accomplished by *the use of air as the source of oxygen,* and *some* water or carbon dioxide *in addition* to that formed *can* be admitted to the mixture in the reaction zone *if desired.*"

Here, again, as in the original patent, water *in addition* to the air-borne and formed water, "*can*" be admitted to the mixture in the reaction zone, "*if desired*", for the expressed purpose—identical with that of the original patent—that the reaction may be "*facilitated*".

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[9] Water is always in a vapor or gaseous form in air and in the reaction chamber at the temperature specified for the process.

The specification then proceeds to describe the process (column 1, line 44) as:

> "• • • passing a mixture *containing air* and ethylene through a tube • • • within which is placed such a surface catalyst as one composed of silver • • •"

Then follows the description and explanation of the last factor necessary to the complete process, namely, the temperature range, the details of which are not here in dispute, and which concededly are the same in both patents.

Finally, the specification of the reissue states (column 2, line 12):

> "*In any case*, the ethylene and oxygen are thus reacted simultaneously at the temperatures set forth *in the presence of a surface catalyst and of water*, and the process is conducted to produce ethylene oxide *as a direct product* in substantial and economic amount."

By this language the patent states, as clearly as language permits—and as did the original patent—that the *necessities* of the patented process for the direct oxidation of ethylene to produce ethylene oxide, consist of directly combining ethylene and oxygen *in the presence of water* and a catalyst, under specified temperature conditions in the reaction chamber.

As is quite usual, the claims of the original patent were retained in the reissue, and the "inadvertence, accident or mistake" which resulted in their inadequacy was cured by the submission of two additional claims (numbered 8 and 9) which were allowed by the Patent Office, and which alone are involved in this case.

It is believed to be unnecessary to analyze the process recited by these two claims, as that was done carefully and fully by the District Court (R. I, pp. 4-5), and was reproduced in the opinion of the Court of Appeals (R. II, p. 179).

For our present purpose of crystallizing the point which is in dispute, and upon which Petitioner's Brief is concentrated with respect to the first question it presents to this Court, we merely call attention to the fact that in *each* of these claims the process of the invention is recited as comprising "forming a mixture containing ethylene and molecular oxygen", and causing that mixture to react in a reaction zone maintained at a specified temperature, in the presence of the catalyst, and "*in the presence of water*" (line 34 of claim 8; and line 25 of claim 9).

From this it will be seen that the two claims added to the reissue patent are directed, specifically and expressly, to the *same* invention as that described in the original patent, and that they *each* recite all of the necessary elements or conditions enumerated on page 5 of this brief, which everyone is agreed are necessary to effect the direct oxidation of ethylene to produce ethylene oxide by the patented process.

With the simple indisputable facts of the case thus recited, we proceed to the merits of the first point of argument presented by petitioner, reserving until later the statement of such additional facts as may be necessary for consideration in discussing petitioner's second point.

Summary of Argument.

1. Claims 8 and 9 of the reissue patent are for the same invention as that of the original patent.
2. Petitioner has acquired no "intervening rights" which, legally or equitably, justified the deliberate construction of a commercial plant, started more than a year after the grant of the reissue patent and with knowledge thereof, or the subsequent commercial operation of the plant in deliberate and conceded infringement.

ARGUMENT.

I.

Claims 8 and 9 of the reissue patent are for the same invention as that of the original patent.

The first point of argument of petitioner (Brief, p. 26) accurately frames the first issue presented by this case, and quite fittingly crystallizes what we regard as the error of the statement of the first question appearing on page 2 of Petitioner's Brief.

We agree that the sole question presented on this phase of the case is whether or not claims 8 and 9 of the reissue patent are *for the same invention* as that of the original patent.

We likewise agree with Petitioner's Brief, without qualification or reservation of any kind, that the law is that *if* claims 8 and 9 of the reissue patent are, in fact, for a *different invention* from that of the original patent, then those claims are invalid. On the other hand, we assert (and Petitioner's Brief implicitly is in agreement) that if claims 8 and 9 of the reissue patent in suit *are*, in fact, for the *same invention* as that of the original patent, then the claims are valid, and, infringement thereof having been conceded (Petitioner's Brief, p. 20), the judgment of the Court of Appeals below should be affirmed.

Whether or not claims 8 and 9 are for the same invention as that of the original patent is a simple question of *fact*, on which both the District Court and the Court of Appeals below are in complete accord. If the unanimity of opinion in the Courts below on this factual issue is not accepted as controlling and "unassailable", as it should be under

familiar legal principle, [10] the question can be easily and quickly settled by this Court by a simple comparison of the two documents.

From the foregoing analysis of their disclosures (*ante*, pp. 6-13) it is believed to be apparent and beyond dispute that the *invention* described by the specifications of both the original and reissue patents is *identical*. The invention in each is expressly recited, in one form of expression or another, as *the production of ethylene oxide by the direct oxidation of ethylene, or, synonymously stated, the combining of molecular oxygen with ethylene*. In *each* specification it is recited that this is effected by combining ethylene and molecular oxygen *in the presence of water* and the catalyst, under specified temperature conditions. In *each* case the necessary molecular oxygen is obtained from *air*, which, concededly, and as a matter of common knowledge, also contains the necessary water.

In *both* the original and reissue patents the necessity for the presence of water to *cause* the desired reaction is expressly recorded. In *each* of the patents there is expressed the *optional* possibility of utilizing *additional* water to *facilitate* the reaction, or to increase the *efficiency* thereof and to check the formation of undesirable side reaction products.

In other words, there is a complete and literal identity of substance between the invention shown and described in the original patent and the invention shown and described in the reissue patent.

In a similar manner, it will be seen that there is complete identity of the invention *claimed* by the original patent and that recited in claims 8 and 9 of the reissue. Each of claims 8 and 9 expressly recites that at the specified tem-

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[10] *Adamson* v. *Gilliland*, 242 U. S. 350.

perature the reaction between ethylene and oxygen takes place "*in the presence of water*" and the catalyst. This language is almost verbatim the same as the language contained in the claims of the original patent which recite (e. g. claim 1) that the ethylene is subjected

> "to the simultaneous action of oxygen and water, in the presence of a catalyst".

Indeed, it will be seen, on an examination and detailed comparison between claims 8 and 9 and the claims of the original patent (e. g. claims 1, 2 or 3), that the *only* difference between them is a change in the designation of the catalyzer to "a material having the catalytic characteristics of silver" (claim 8), or "catalyst material composed essentially of silver" (claim 9).

The entire propriety and want of significance in this change of designation of the catalyzer is not only shown by the specifications of both the original and reissue patents (*each of which specifies silver alone as a usable catalyst*), but it is also expressly conceded by petitioner (Petitioner's Brief, first paragraph p. 6).

In consequence, respondent asserts as an indisputable and dispositive fact—found by both of the Courts below to be the fact—that claims 8 and 9 of the reissue are for *the same invention* as that described and claimed by the original patent. Indeed, as the Court of Appeals below pointed out (R. II, p. 183):

> " • • • if claims #8 and #9 of the reissue patent had been added to the claims of the original patent, we do not believe these claims could have been held to be invalid on the ground that these claims were not sufficiently covered by the specifications of the original patent."

As this Court has had occasion to note (*Seymour* v. *Osborne*, 11 Wall 516, at pp. 545-546) in a technical chem-

ical case of this character, the opinion of skilled workers in the art is of particular value and importance. Here, the foregoing finding of fact by both of the Courts below was unanimously supported by the testimony of Dr. Lamb (R. I, p. 249), Dr. Stevenson (R. II, pp. 25, 43-44) Dr. Frazer (R. II, p. 85), Dr. Curme (R. II, pp. 62-63) and Dr. Law (R. II, pp. 52-53).

Petitioner's argument before this Court is based on a fundamental error of fact.

Petitioner's entire case on the issue under discussion is predicated upon the assertion (reflected in the error of statement of the first question presented on page 2 of its Brief) that the original patent included as a step of the process *the mandatory introduction of water* into the reaction chamber, whereas the reissue makes the introduction of water *permissive*. It readily will be seen from what has already been said that this is quite an erroneous conception, and certainly an incorrect description of the two patents. *In both of the patents the presence of water is specifically stated in the specifications and in the claims to be necessary for the reaction to produce ethylene oxide.* In *both* of the patents the presence in the reaction chamber of the necessary water and the necessary oxygen, and the mandatory introduction of both, is effected by *the introduction of air*. *Each* of claims 8 and 9 of the reissue *expressly* recites that the reaction takes place *"in the presence of water."* *Each* of the claims of the original patent recites that the ethylene is subjected to the *"simultaneous action of oxygen and water"*. It is apparent, therefore, that the presence of the necessary water in the reaction chamber, as well as its introduction thereto, is just as *mandatory* in the reissue patent

as it is in the original. In consequence, petitioner's error of *fact* is made crystal clear.

What petitioner is attempting to do is to confuse the water which is mandatorily present, and which is supplied by the introduction of *air* into the reaction chamber, with the *additional* water which, as we have seen, is described by *both* patents as being *optionally* usable to increase the "efficiency" of the reaction or to enable the reaction to be "facilitated" and the production of undesirable by-products checked.[11] *Both* the original and reissue patents make it clear beyond question that this *additional* water is something wholly distinct or apart from the water which mandatorily must be present in the reaction chamber and is introduced, with oxygen, as a constituent of air.

Petitioner's infringing operations meet every *mandatory* requirement of *both* of the patents. With respect to the *mandatory* introduction of water into the reaction chamber, page 18 of Petitioner's Brief recites:

> "Petitioner is engaged in the commercial production of ethylene glycol in its manufacturing plant at Baltimore, Maryland. As one of the steps in such manufacture, ethylene oxide is produced by passing a gaseous mixture of ethylene *and the constituents of atmospheric air (including a substantially normal water vapor content*, R. Vol. I, p. 279) through a chamber containing a catalyst consisting of silver disposed upon a carrier of aluminum oxide bonded by a fusion process, the mixture being passed continuously through the chamber in intimate contact with the catalyst through an extended period of time. Throughout the operation the temperature within the

[11] As part of its effort to this end, petitioner suggests, by a footnote on page 45 of its Brief, that the possibility of dispensing with the "introduction" of *additional* water was not discovered by the inventor until years later. This, of course, is not so, as has already been shown and as was concurrently found by the Courts below.

chamber is maintained between 150° and about 400° C. As a result, ethylene oxide is produced in substantial amount, and the resulting gaseous mixture containing the ethylene oxide is passed out of the chamber continuously during the operation."[12]

Compare this description, in words of petitioner's selection, with the statement of invention of the original patent in its opening paragraph. Petitioner's statement is:

> "• • • passing a gaseous mixture of ethylene and the constituents of *atmospheric air* (*including a substantially normal water vapor content* • • •) through a chamber containing a catalyst • • • ".

The statement of the original patent is:

> "• • • subjecting ethylene to the simultaneous action of the *oxygen* of air *and* of *water*, in the presence of a catalyst • • • ".

Despite the obvious and indisputable identity between petitioner's statement of its process and the statement of the original patent above quoted, petitioner asserts that the original patent is for an invention *different* from that of the reissue patent *the infringement of which is conceded* (Petitioner's Brief, p. 20). As a matter of simple logic, it will be seen that infringement by petitioner of claims 8 and 9 of the reissue patent could result *only* because they claim the same invention as that of the original patent be-

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[12] This statement of petitioner's process in Petitioner's Brief is a paraphrase of the stipulated description of petitioner's process constituting Plaintiff's Exhibit 7 (R. I, p. 279). The exhibit further states:

> "The gaseous mixture entering the chamber contained usually about 1.5% by volume of water vapor, not exceeding 1.7% by volume at any time."

If petitioner eliminated all water it would not infringe (R. II, p. 32).

cause of the identity between petitioner's process and that of the original patent as above shown. The precise and exact science of mathematics teaches that when two things (the original and reissue patents) are each identical with the same thing (petitioner's process) they, themselves, are identical.

It should now be quite obvious that the reason why petitioner's operation was not an infringement of claims 1 to 7 of the original patent was *not* because of the difference between *mandatory* or *voluntary* introduction of water, as petitioner argues, but was solely because of the two simple facts:

(1) that the silver catalyst used by petitioner did not consist of a *mixture* of silver, *with* gold, copper or iron (claim 1), or a *mixture of* silver, gold, copper and iron (claim 2), or a *mixture of* silver and gold (claims 3 and 6), or a *mixture of* silver, gold and copper (claim 7), *although the patent states that "silver alone" was a catalyst that could be used in the process constituting its invention;* and

(2) that petitioner did not introduce hydrogen into the reaction chamber (claims 4 and 5), *although such introduction of hydrogen was stated by the patent to be entirely optional.*

Consequently, it is submitted that petitioner's first point of argument is based on a wholly erroneous statement or assumption of fact, and is entirely without merit. Essentially, it reduces itself to the mere contention that a reissue patent, which claims an invention identical in every vital, essential, substantial and material respect with that of the original patent, is void because it is not "for the same

invention" as that of the original patent.[13] We have heretofore studiously refrained from citing authority on this issue because there is no dispute or issue of law here involved, but petitioner's contention is so illogical and so contrary to all of the decisions of this Court on this precise point that we venture the citation of an early and a late case showing the consistent opinion of this Court throughout the years that identity of invention between original patents and their reissues is established by *substance* and not merely by words (*Bates* v. *Coe*, 98 U. S. 31; *Abercrombie & Fitch Co. et al.* v. *Baldwin et al.*, 245 U. S. 198).

It follows that claims 8 and 9 of the Lefort reissue patent are valid.

II.

Petitioner has acquired no "intervening rights".

Respondent here records complete recognition of the doctrine of intervening rights, and characterizes it as a most salutary doctrine as well as a necessary curb on improper use of the Reissue Statute by patentees who seek to broaden a patent, after its grant, so as to include within its monopoly commercial operations of a competitor which were free from the monoply of the original patent, and were actually engaged in by the competitor before application for the reissue was filed. In other words, respondent does not dispute the simple proposition of law that if petitioner's commercial operations had been conducted prior to the application for the reissue patent on September 25, 1936, then the reissue patent could not be utilized to prevent petitioner from continuing those commercial operations.

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[13] Both of the Courts below found that the inventions of the original and reissue patents were identical in every "vital, essential, substantial and material" respect (R. II, p. 177).

Here again, however, whether or not petitioner is possessed of "intervening rights" is dependent solely upon the chronological facts of the case, none of which is in dispute. For convenience they are here marshalled.

1. Application for the original Lefort patent was filed on March 22, 1932.

2. Petitioner first became familiar with the Lefort invention in 1933, through acquisition of copies of the French patents on which the United States application was based (R. I, p. 189).

3. Petitioner allegedly began, in January, 1934, "research and development work", which it says ultimately resulted in its commercial infringement (Petitioner's Brief p. 19).[14]

4. *The original Lefort patent was issued on April 23, 1935.*

5. *The application for the reissue patent was filed on September 25, 1936.*

6. *After the application for reissue was filed*, namely "by the *end of 1936*" an experimental process allegedly had been "developed" by the petitioner which it was *believed* could be used commercially (Brief, p. 19).[15]

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[14] Although petitioner alleges that it began research and development work in January, 1934, to produce ethylene oxide by direct oxidation, the fact is that its early work had nothing whatever to do with a catalytic process, because its chemist, Mr. Carter, in charge of this research work, admitted that he had had "relatively little experience" in the art of catalysis until the Fall of 1935 (R. I, p. 196); and the first record produced by petitioner of even an experiment of that character was in February 1935 (R. I, p. 197). His *next* experiment was in December 1935 (R. I, p. 200). Both were failures (R. I, p. 203).

[15] Although Petitioner's Brief vaguely fixes this time as "the end of 1936", it was expressly admitted that *this was subsequent to the application for the reissue patent* (R. I, p. 203).

7. *Seven months after the application for reissue was filed,* namely, in April 1937, *plans* for an *experimental* "pilot" unit were *started* by petitioner, and "*estimates* for a commercial plant were *undertaken*" (Brief, p. 19).

8. *The reissue patent was granted on May 18, 1937.*

9. *After the grant of the reissue,* the construction of petitioner's experimental "pilot" unit was started (R. I, p. 224). It was completed and *first operated* "in the middle of 1937" (Brief, p. 19).

10. *A year after the grant of the reissue* "construction of petitioner's commercial plant near Baltimore, Maryland, was *undertaken* in the middle of *1938*" (Brief, p. 19).

11. *Two years after the grant of the reissue,* petitioner's commercial plant was *completed* and *first put in operation on May 9, 1939* (Brief, p. 19).

To the foregoing may be added:

12. Petitioner, concededly, was familiar with the original Lefort patent shortly after its issuance (R. I, p. 189).

13. Petitioner, concededly, was familiar with the reissue patent immediately after its grant (R. I, p. 228).

From the foregoing it will be seen that the relevant facts are few and simple. They all boil down to the simple statement that *petitioner did not begin the construction of its plant, in which its infringing operations are conducted, until more than a year after the reissue patent was granted, and did not begin its infringing operations in its plant until two years after the reissue patent was granted; and that all this was done with full knowledge of the existence of the*

reissue patent, and the realization that the proposed operations would be in infringement thereof.[16]

Moreover, petitioner's appropriation of the invention of the Lefort patent, and the deliberate infringement thereof, were elected in studied and deliberate preference to the utilization of another and different process currently used in the industry for producing ethylene oxide, and which petitioner had been advised by its patent counsel was patent-free and available for adoption (R. I, 228, 229).

It would seem to be conclusive, therefore, that petitioner is possessed of no intervening rights.

However, petitioner advances what it characterizes as a *novel* proposition of law, namely, that because it had conducted some *experiments* prior to the grant of the reissue, the doctrine of intervening rights should be extended so as to include mere experimentation within its principle, and place mere intervening *experimentation* on the same footing as intervening *commercial operations* to which, for obvious reasons, the doctrine necessarily is limited. Petitioner's suggested extension of the doctrine would permit one who has merely *experimented* between the grant of an original patent and an application for reissue thereof to *initiate* and engage in infringing *commercial operations subsequent to the grant of the reissue.*

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[16] Petitioner's Brief repeatedly asserts (*e. g.* p. 19) that its "expenditures upon the research and development work from its inception up to September 25, 1936 when the application for reissue of the patent in suit was filed, totaled about $132,000, and its further expenditures on this research up to May 18, 1937, when the reissue patent was granted, totaled $19,000, an aggregate of $151,000". While we do not regard this fact, if it be a fact, to be material to any question before this Court, it should be noted (and it was commented upon by the Courts below), that there is not one word of evidence which shows, or tends to show, how much, if any, of this amount was expended for experiments on a catalytic process for producing ethylene oxide, or one in any other respect relevant to the process of the Lefort patent which petitioner ultimately adopted.

We agree that such an extraordinary proposition is certainly novel, and we assert that it is quite illogical from a legal viewpoint, even if founded on a factual basis, which it is not in the present case.

In the first place, it is well settled that *any* intervening rights which might accrue, *must* accrue prior to the *filing* of the application for the reissue (Walker on Patents, Deller's Edition, Volume II, p. 1384). As seen from the foregoing chronology, the application for reissue was filed on September 25, 1936; *and this, concededly, was prior to the time that petitioner alleges it had succeeded, in its experiments, in developing a process which it believed could be commercially utilized* (Petitioner's Brief, p. 19). Therefore, it is quite obvious that petitioner acquired no "rights" of a nature with which this case is concerned, under the "intervening rights" doctrine, either as it exists, or if extended in the extraordinary manner petitioner suggests.

In the next place, it would seem to be obvious that any "rights" that one would acquire under such circumstances, to be characterized as "intervening rights" in the sense petitioner uses the term, must, necessarily, be of the *same* character as those which were created by factual activity. In other words, the "intervening rights" which this Court has had occasion to pass upon (Cf. *Sontag Chain Stores Co.* v. *National Nut Co.*, 310 U. S. 281), in *every* instance have been *commercial* "rights" which were created by actual *commercial* operations in the period intervening between the grant of the original patent and the application for the reissue. By a logical application of the doctrine it would seem to be apparent that the only "right" acquired by one engaged in *experimentation* between the grant of an original patent and the application for reissue, would be the right of *experimentation* after grant of the reissue. The obvious reason why no such application of the doctrine has

reached judicial notice is because of the elementary fact that mere experimentation of this kind does not constitute an infringement of a patent grant, regardless of when it occurs (Cf. *Oppenhusen* v. *Falke* (1861), 2 Fisher 181; 4 Blatch. 493; *Poppenhusen* v. *New York Gutta Percha Comb Co.* (1858), 2 Fisher 62; *Frearson* v. *Loe* (1878), L. R. 9; Ch. D. 48.

The decision of the Second Circuit Court of Appeals in *Otis Elevator Co.* v. *Atlantic Elevator Co.*, 47 F. (2d) 545, is cited by Petitioner's Brief (p. 50) as alone supporting its unusual contention. A reading of the entire opinion shows, conclusively, that it does not. Indeed, a reading of the portion thereof quoted on page 50 of Petitioner's Brief gives the clue to its actual holding. In that case application for reissue was not filed until "seven and a half years after the original patent issued" (p. 548), and during that period not only had the *experimental* installations "at Los Angeles, Chicago, and Pittsburgh" been made, but there also had been made a *commercial* installation in a building at Cleveland which installation was "*completed before the application was filed*".

From this it will be seen that in that case the doctrine of "intervening rights" was sustained by the Court, not because of intervening *experimentation*, as petitioner suggests, but because of intervening *commercial* activity *prior to the filing of the application for reissue*—both of which essential factors are entirely absent in the present case.

In view of the foregoing, it is abstractly submitted that petitioner's suggested extension of the doctrine of "intervening rights" is wholly without logical support or legal justification. However, and as before pointed out, further discussion thereof is unnecessary because, in any event, the doctrine, as it stands or as petitioner would extend it, has no application here in view of the facts of this case.

In conclusion on this issue, we ask the Court to read the short passage of the opinion of the District Judge (R. I, pp. 19-20), wherein it was stated, in view of the undisputed facts of the case:

> "• • • it is difficult to understand how this contention can be seriously made";

and we likewise commend to this Court the statement of the Court of Appeals with respect thereto (R. II, p. 185), namely:

> "Defendant is here clutching for a very feeble straw."

It is submitted, therefore, that petitioner's second point of argument is utterly wanting in merit.

Conclusion.

The case at bar brings to this Court the first instance in many years of a patented invention, the stature of which commands the respect due genius. We have shown that claims 8 and 9 of the reissue patent in suit are for the invention disclosed in the original patent grant; that deliberate infringement of these claims has been conceded; and that petitioner is not possessed of any "intervening" or *other* "rights" with respect thereto. In consequence, the judgment of the Court of Appeals below should be affirmed.

Respectfully submitted,

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